

Application No. 10/584,698
Amendment Dated September 29, 2011
Reply to Office Action Dated October 14, 2011

Remarks

Claims 1-14 are pending.

Claims 1, 8 and 9 are amended.

Claims 1-14 are submitted herein for review.

No new matter has been added.

In paragraph 2 of the Office Action, the Examiner has issued a number of rejections under 35 U.S.C. § 112 to claims 1 and 8-11.

Regarding claim 1, Applicants have amended claim 1 to provide reference to “substantially vertically close.” Moreover, Applicants note that the breadth of a claim is not to be equated with indefiniteness. *In re Miller*, 441 F.2d 689, 169 USPQ 597 (CCPA 1971). If the scope of the subject matter embraced by the claims is clear, and if applicants have not otherwise indicated that they intend the invention to be of a scope different from that defined in the claims, then the claims comply with 35 U.S.C. 112, second paragraph. See MPEP 2173.04

Regarding claim 8, the rejected clause has been removed.

Regarding claims 9 and 10, Applicants submit that the relationship between “a plate” and the rest of apparatus is clear since claim 9 defines “...a plate including the slot...,” with the slot being defined in claim 1. Thus, the structural connections, including the plate, are defined in the present claims. See for example, page 5, lines 6-9 and page 9, lines 4-13. Claim 10 is dependent on claim 9 and should be clear for the same reasons. Applicants respectfully request that the rejection of these claims be withdrawn.

Regarding claim 11, Applicants submit that the relationship between “a disk” and the rest

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of apparatus is clear since claim 11 defines "...a disk including said slot..." where the slot is defined in claim 1. Thus, the structural connections including the disk are defined in the present claims. See for example, page 5, lines 14-16 and page 9, lines 10-13. . Applicants respectfully request that the rejection of this claim be withdrawn.

Turning to the prior art, the Examiner has rejected independent claim 1 under 35 U.S.C. § 102(b) as being anticipated by Janoch. Applicants respectfully disagree and submit the following remarks in response.

The present arrangement as claimed in claim 1 is directed to a device for depositing a layer based on polycrystalline silicon onto a substantially plane, elongate, moving support having two longitudinal faces and two longitudinal side edges. The device has a crucible containing a bath of molten silicon, with the support being designed to be dipped at least in part in the bath and to pass substantially vertically in its long direction through the equilibrium surface of the bath.

At least one edge control element is provided with each edge control element being maintained substantially vertically close to one of the two longitudinal side edges so that the level of the bath raises over each longitudinal face of the support. Each edge control element has walls defining a longitudinal slot beside the corresponding longitudinal side edge, each slot being dipped in part in the bath so as to raise the level of the bath by capillarity in the vicinity of the corresponding longitudinal side edge, where at least one of the walls, referred to as an "insertion" wall, facing part of one of the longitudinal faces, is substantially plane.

As noted on page 1, lines 17-27, in the prior art, the thickness of the silicon layer deposited on the faces of the ribbon decreases rapidly on approaching the two side edges of the ribbon. This results in the deposited layer of silicon presenting two lateral margins along each of

the two side edges with physical characteristics that are degraded relative to those in the middle portion of the layer. These side margins are practically unusable, in particular for making photovoltaic cells, and they constitute sources of fractures occurring in the silicon layers.

Although the prior art has attempted to address this issue, as noted in col. 2, lines 26-32, such attempts still cause the raising of the solid-liquid connection line at the edges to remain small, and the transition zone is still too wide. In addition, the reduction in the thickness in the margins remains large and this zone continues to be a source for generating fractures during cooling and subsequent handling of the ribbon.

The present arrangement as claimed in claim 1 address this issue and as noted on col. 3 line 34 through col. 4, line 12, the presence of the claimed edge control element has an effect on the temperature in the liquid sheet in the immediate vicinity of the corresponding edge of the support by locally modifying heat exchange within the bath and to some extent within the support (radiant exchange with the outside is modified by the presence of the elements). Moreover, such control elements, with two substantially plane insertion walls raises the level of the bath over each longitudinal face of the support and at each longitudinal edge.

On the other hand, the cited prior art, namely Janoch, is directed generally to an edge meniscus control of crystalline ribbon growth. To form the rejection, the Examiner interprets that the longitudinal slot as being formed by element 72 and the inner walls of element 71 in Figure 3b (see page 4 of the Office Action). In Figure 3b of Janoch the level of the bath increases at each longitudinal edge of the support. However, Janoch is silent about the fact that the level of the bath further increases over each longitudinal face of the support.

As such, the cited Janoch reference does not teach or suggest all of the elements of the present independent claim 1. For example, there is no teaching or suggestion in Janoch that

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discloses an each edge control element comprising walls where at least one of the walls, referred to as an "insertion" wall, faces part of one of the longitudinal faces, is substantially plane.

Likewise, there no teaching or suggestion in Janoch that discloses at least one edge control element, where each edge control element is maintained substantially vertically close to one of the two longitudinal side edges so that the level of the bath raises over each longitudinal face of the support.

For at least these reasons, Applicants request that rejections of independent claim 1 be withdrawn. As claims 2-14 depend from claim 1 respectively, these claims should be allowed for at least the same reasons.

In view of the foregoing, Applicants respectfully submit that pending claims 1-14 are in condition for allowance, the earliest possible notice of which is earnestly solicited. If the Examiner feels that an interview would facilitate the prosecution of this Application they are invited to contact the undersigned at the number listed below.

Respectfully submitted,

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